

CLAIMS

What is claimed is:

1. A single-panel color image display apparatus comprising:
a light source emitting light;
a colored light separator having a plurality of dichroic filters of a reflective type separating the light emitted from the light source according to wavelength, and a dichroic filter reflecting a red light beam being disposed lastly among the plurality of dichroic filters;
and
a micro display controlling the light separated by the colored light separator according to color on a pixel-by-pixel basis according to an input image signal and forming a color image.
2. The single-panel color image display apparatus of claim 1, wherein the colored light separator includes first through third dichroic filters reflecting colored light beams in an order of a blue light beam, a green light beam, and a red light beam or in an order of the green light beam, the blue light beam, and the red light beam, respectively.
3. The single-panel color image display apparatus of claim 2, wherein the first through third dichroic filters are parallel to one another.
4. The single-panel color image display apparatus of claim 2, further comprising a scrolling unit having a spirally arranged array of lens cells and obtaining an effect of a linear motion of a lens array due to the rotation of the spiral array of lens cells, and performing a scrolling operation.
5. The single-panel color image display apparatus of claim 1, wherein the plurality of dichroic filters are parallel to one another.
6. The single-panel color image display apparatus of claim 1, further comprising a collimating lens focusing light emitted from the light source into parallel light.
7. The single-panel color image display apparatus of claim 6, further comprising a scrolling unit having a spirally arranged array of lens cells and obtaining an effect of a linear motion of a lens array due to the rotation of the spiral array of lens cells so that a scrolling operation is performed.

8. The single-panel color image display apparatus of claim 1, further comprising a scrolling unit having a spirally arranged array of lens cells and obtaining an effect of a linear motion of a lens array due to the rotation of the spiral array of the lens cells so that scrolling operation is performed.

9. The single-panel color image display apparatus of claim 8, wherein the lens cells of the scrolling unit have a cross-section of an arc shape.

10. The single-panel color image display apparatus of claim 9, further comprising a mask at a boundary portion between the lens cells of the scrolling unit, preventing color mixture among the red, green, and blue colored light beams.

11. The single-panel color image display apparatus of claim 8, further comprising a mask at a boundary portion between the lens cells of the scrolling unit, preventing color mixture among the red, green, and blue colored light beams.

12. The single-panel color image display apparatus of claim 8, wherein the scrolling unit is disposed between the light source and the colored light separator.

13. The single-panel color image display apparatus of claim 8, further comprising first and second lens arrays disposed between the scrolling unit and the micro display.

14. The single-panel color image display apparatus of claim 13, further comprising a relay lens disposed between the second lens array and the micro display.

15. The single-panel color image display apparatus of claim 13, wherein a distance among the plurality of dichroic filters is set such that colored light beams separated by the colored light separator are incident on the same lens cell of the first lens array without color mixture among the colored light beams.

16. A single-panel color image display apparatus, comprising:
a light source emitting light;
a colored light separator separating the light emitted from the light source according to wavelength;
a scrolling unit having a spirally arranged array of lens cells and obtaining an effect of a linear motion of a lens array due to a rotation of the spiral array of the lens cells so that scrolling operation is performed, the scrolling unit having a mask at a boundary portion

between the lens cells of the scrolling unit, preventing color mixture among colored light beams; and

a micro display controlling the light separated by the colored light separator according to color, and scrolled, on a pixel-by-pixel basis, according to an input image signal and forming a color image.

17. A single-panel color image display apparatus, comprising:
a light source emitting light;
a collimating lens focusing the light emitted from the light source;
a spiral array of lens cells scrolling the focused light, the lens cells having a mask at a boundary portion between the lens cells;
a colored light separator separating the scrolled light having a plurality of dichroic filters to separate the scrolling light, each of the plurality of dichroic filters reflecting incident light of a different wavelength,
a plurality of lens arrays focusing the separated light; and
a micro display displaying the focused light.

18. The single-panel color image display apparatus according to claim 17, wherein the plurality of lens arrays includes cells matched in a one-to-one correspondence or cells in a fly's eye array.

19. The single-panel color image display apparatus according to claim 17, wherein a number of lens cells or a rotation speed of the spiral array being modified to synchronize with an operating frequency of the micro display.